

wherein the distributed information comprises information exchanged amongst devices in the ad-hoc network.

REMARKS

Reconsideration and allowance of the claims pending in the application, based on the Remarks, as follows:

I. Status of Claims:

The specification has been objected to under 37CFR 1.75(d) (1) and MPEP 606.01(o).

Claims 2-11, 13-22, 24-30, 32-38 and 40-51 are pending in the subject application.

Claims 2-6, 9-11, 13-17, 20-22, 24-25, 28-30, and 45-47 are rejected under 35 USC 103(a) as unpatentable over Nidd, of record in view of Beck, of record.

Claims 32-34, 36-38, 40-41, 43-44 and 48-51 are rejected under 35 USC 103 (a) as unpatentable over Nidd, of record in view of Beck, of record and in further view of Hermann, of record.

Claims 7-8, 18-19, and 26-27 are rejected under 35 USC 103 (a) as unpatentable over Nidd, of record in view of Beck, of record and in further view of Smith, of record.

Applicants respond to the indicated Paragraphs of the subject Final Office Action, as follows:

II. Answer to Examiner Arguments

The Examiner cites Nidd at sections 20-23 and 39-44 as describing the subject matter of claim 45. Applicants disagree, as follows:

Nidd at sections 20-23 discloses a wireless network device for performing service discovery in a pervasive wireless network, the device comprising: means for accessing a remote device in order to obtain information for the set-up of a connection to the remote device via the

network, means for establishing a connection to the remote device and for retrieving information related to services provided by the remote device..

Nidd at sections 39-44 discloses a Bluetooth device broadcasts inquiry messages which are sensed by Bluetooth devices that are in an inquiry scan state. Upon receipt of an inquiry message which comprises a General or a Dedicated Inquiry Access Code, GIAC or DIAC, a remote network device may reply with a Frequency Hop Synchronization packet FHS which contains all the information required for establishing a connection.

The Examiner cites Beck as describing a missing middleware layer in Nidd. Beck only mentions a middleware layer. There is no disclosure or suggestion in Beck of the middleware layer performing application and service discovery. The Examiner cites the combination of Nidd and Beck as describing applicants' claimed subject matter. Applicants disagree, as follows:

Applicants' specification at Paragraph 0049 discloses a source device sends a GIAC including bit codes specifying general capabilities of the inquired device. A peer device receives the GIAC request and responds by sending an inquiry response message. The inquiry response message is an inquiry result command wherein the bit codes are modified to indicate the presence of a middleware layer. The source device examines response message to determine whether the peer device may include the middleware layer. If the inquiry response message does not include the indication, the process exits.

If the inquiry response message includes an indication of a middleware, the source device sends a paging request message and confirms whether the peer device includes the middleware layer. A recognition request message and subsequent response message confirm whether the peer device includes the middleware layer. A connection is established with the peer device only upon confirmation of the middleware layer. If the peer device does not include the middleware layer, the process exits, thereby saving the source device power and time in locating another peer device including a middleware layer.

Summarizing, there is no disclosure or suggestion in Nidd and Beck of (1) a source device sensing bit codes of an inquiry result command to determine the presence of a middleware layer, (2) confirming the presence of a middleware layer in the peer device, and (3) establishing a connection with the peer device only upon confirmation of the presence of the

middleware layer in the peer device. Clearly, there is no support for the Examiner's claim that Nidd and Beck read upon the claimed subject matter.

III. Response To The Objection To The Specification:

The term "medium" is well-known to workers skilled in the art in the communication arts. The electronic dictionary "Wikipedia" defines the term as "any tool used to store and deliver information or data." Applicants use the term in the claim according to its well known meaning. However, applicants are prepare to amend the term, where present, to "a computer recordable and readable storage medium" to overcome the objection by describing a product implementing the process.

IV. Response to Claim Rejections – 35 USC 103:

Paragraph 5:

Claims 2-6, 9-11, 13-7, 20-22, 24-25, 28-30, 45-47 include elements not disclosed or suggested in Nidd, of record in view of Beck, of record and overcome the rejection of the claims under 35 USC 103 (a), as follows:

1. Claims 45-47 include elements not disclosed or suggested in Nidd in view of Beck, and overcome the rejection under 35 USC 103 (a), as follows:

- (i) "conduct an inquiry to discover at least one nearby device in an ad-hoc network, an inquiry result including an indication that said at least one nearby device may include a middleware layer, said middleware layer comprising a middleware software for providing application and service discovery;"

The Examiner cites Nidd at Paragraphs 12, 20-23 and 44 as describing the claim element (i). The cited Nidd Paragraphs describe standard service discovery protocol (SDP). There is no disclosure in Nidd of an inquiring device examining bit codes of a nearby device response to determine the presence of a middleware layer. Nidd discloses sending a Frequency

Hop Synchronization message as a response to the inquiry response message. Nidd fails to disclose or suggest the subject matter of claim element (i).

(ii) “initiate wireless message exchange with said at least one nearby device to conduct middleware-based application and service information exchange for determining whether at least one target device supporting a required application or service is accessible in the ad-hoc network, the application and service information including distributed information;”

The Examiner cites Nidd at Paragraphs 3-5, 11-13 as describing claim element (ii).

The cited Nidd Paragraphs describe standard Bluetooth service discovery protocol, wherein a connection is established between the inquiring and nearby devices for subsequent messaging. There is no disclosure in the cited Paragraphs that before initiating wireless message exchange with the nearby device the following occur as recited in claims 45-47:

- a) confirm whether the nearby device includes a middleware layer;
- b) request confirming information from the nearby device;
- c) when the nearby device includes the middleware layer, initiate a wireless connection;
- d) conduct middleware based application and service information exchange over the connection.

Based on the above, there is no support in Nidd for the rejection of element (ii).

The Examiner cites Beck at column 2, lines 45-55 as describing a middleware layer for incorporation in Nidd. Beck simply mentions a middleware layer. There is no disclosure in Beck relating to the middleware layer interacting with an inquiring device “to conduct middleware-based application and service exchange information for determining whether a target device supports a required application or service”, as recited in claims 45-47.

The rejection of claims 45-47 is without support in the cited art for the reasons indicated above. Withdrawal of the rejection and allowance of claims 45-47 are requested.

2. Claims 2 and 13 have been rejected under 35 USC 103 (a) based on Nidd in view of Beck, the cited art. Claims 2 and 13 depend from independent claim 45 and are patentable over the cited art on the same basis as independent claim 45.

3. Claims 3, 14, 24. - The Examiner cites Nidd at Paragraphs 42-43, 45 describing the claimed subject matter. Applicant can find no disclosure in the cited Paragraphs of distributed information records (see Applicants specification at Paragraph 10). Nor does the service records described in Nidd at Paragraph 0044 provide distributed information records. In any event, Claims 3, 14 and 24 depend from independent claim 45 or 47 and are patentable over the cited art on the same basis as independent claim 45 or 47:

4. Claims 4, 15. - The Examiner cites Nidd at Paragraphs 0042-0043, 0045 and 0055 describing the claimed subject matter. Claims 4 and 15 depend from independent claim 45 and 46, respectively and are patentable over the cited art on the same basis as independent claim 45 or 46.

5. Claims 5 and 16 -. Applicant can find no disclosure in Paragraphs 42, 43, 45, and 55 of Nidd describing the parameters of application information including an identifier, capability, version, state, address, hop count, sequence number, time and a time counter as described in applicant's specification at Paragraph 0044 and 0045. In any event, Claims 5 and 11 depend from independent claim 45 and are patentable over the cited art on the same basis as independent claim 45.

6. Claims 6, 17, and 25 have been rejected under 35 USC 103 (a) based on Nidd at Paragraphs 12, 13 in view of Beck, the cited art. Claims 6, 17, and 25 depend from independent claim 45 or 46 or 47 and are patentable over the cited art on the same basis as the independent claim from which they depend.

7. Claims 9 and 28 - The Examiner cites Nidd at Paragraphs 0012, 0020 and 0042 describing the claimed subject matter. The cited Paragraphs describe a list of services associated with a server. Applicant can find no disclosure in the cited Paragraphs that describe exchanged information that at least one nearby device support, as described in applicant's specification at Paragraph 0022. In any event claims 9 and 28 depend from independent claim 45 or 47 and are patentable over the cited art on the same basis as the independent claim from which it depends.

8. Claim 10 - The Examiner cites Nidd at Paragraphs 0012, describing the claimed subject matter. The cited Paragraph describes a list of services associated with a server. Applicant can find no disclosure in the cited Paragraph that describe exchanging information that at least one nearby device support, as described in applicant's specification at Paragraph 0022. In any event claim 10 depends from independent claim 45, and is patentable over the cited art on the same basis as independent claim 45 from which it depends.

9. Claims 11, 22 and 30 – The Examiner cites Nidd at Paragraphs 0005; 0008; 0013 and 0044 describing the claimed subject matter. The cited art discloses a device (without a middleware layer) executing a standard SDP protocol to retrieve information from a nearby device. The cited Paragraphs do not disclose a processor in a device including a middleware layer disposed to establish a link with a target device and access a required service. In any event, claims 11, 22 and 30 depend from independent claim 45 or 46 or 47, and are patentable over the cited art on the same basis as the independent claim from which it depends.

10. Claim 20 – The Examiner cites Nidd at Paragraphs 0044-45 describing a SDP protocol downloading service records from a service list stored in a server. Applicants can find no disclosure in the cited text describing exchanged information between an inquiring and nearby device that identifies at least one application that the nearby device supports. In any event, Claim 20 depends from independent claim 46, and is patentable over the cited art on the same basis as independent claim 46 from which it depends.

11. Claims 21 and 29 have been rejected under 35 USC 103 (a) based on Nidd at Paragraph 0062. Claims 21 and 29 depend from independent claim 46 or 47 and are patentable over the cited art on the same basis as the independent claim from which it depends.

IV. Response to Rejections under 35 USC 103 (a).

Paragraph 6:

Claims 32-34, 36-38, 40-41, 43-44 and 48-51 include elements not disclosed or suggested in Nidd, of record in view of Beck, of record and in further view of Hermann, of record and the claims overcome the rejection under 35 USC 103(a), as follows;

1. Claims 48, 49, 50 and 51 include elements not disclosed or suggested in Nidd, Beck and Hermann, as follows:

(i) maintain a distributed database to associate each at least one service to at least one device in an ad hoc network;

The Examiner cites Nidd at Paragraphs 42, 43 and 45 and Hermann at column 4, lines 38-65 including the abstract as describing claim element (i). The cited Nidd Paragraphs describe inquiring and nearby devices exchanging service list. Hermann describes a device maintains a record with information about services and associated identifiers and (ii) a list of identifiers about service-providing devices. The list of identifiers are compared to an associated service as being in adjacency of a first device. Neither Nidd nor Hermann, alone or in combination disclose a data base of distributed information associating at least one service to at least one device in an ad hoc network and distributed information comprising information exchanged amongst devices.

Nidd and Hermann fail to disclose or suggest the subject matter of element (i) by he absence of an association list.

(ii) conduct an inquiry to discover at least one nearby device in the ad-hoc network, an inquiry result including an indication that said at least one nearby device may include a middleware layer, said middleware layer comprising a middleware software for providing application and service discovery;

The Examiner cites Nidd at Paragraphs 12, 20-23 and 44 describes the claimed element (ii). Nidd fails to disclose the claimed element (ii) for the reasons given in connection with the consideration of element (i) in claim 45.

(iii) access the distributed database to determine whether said at least one nearby device includes a required service;

The Examiner cites Nidd at Paragraph 42, 43, 45 as describing claim element (iii). The cited Paragraphs only describe exchanging service lists. There is no disclosure in the cited

Paragraphs of accessing the distributed database to determine whether a nearby device includes a required service.

(iv) in response to receiving the indication that said at least one nearby device may include a middleware layer, create a wireless short-range connection to said at least one nearby device;

No prior art has been cited against claim element (iv)

(v) confirm whether said at least one nearby device includes the middleware layer by requesting corresponding information from said at least one nearby device via the wireless short-range connection;

Nidd fails to disclose the subject matter of claim element (v) for the reasons given in the consideration of element (ii) in claim 45.

(vi) when said at least one nearby device includes the middleware layer:

initiate wireless message exchange with said at least one nearby device to conduct middleware-based application and service information exchange for determining whether at least one target device supporting the required application or service is accessible in the ad-hoc network, the application and service information including distributed information;

The Examiner cites Nidd at Paragraph 3-5; 11-13 as describing claim element (vi). Nidd fails to disclose the subject matter of claim element (vi) for the reasons given in the consideration of element (ii) in claim 45.

(vii) wherein the distributed information comprises information exchanged amongst devices in the ad-hoc network.

The Examiner cites Nidd at Paragraphs 0042, 0043 and 0045 as describing the claim element (vii). Paragraphs 0042, 0043 and 0045 describe network devices retrieving

desired service information from other network devices. There is no disclosure or suggestion in the cited Nidd Paragraphs of each network device after a service discovery operation graciously forwarding received information to any other network device encountered within a certain time, as described in applicant's specification at Paragraph 0022.

Beck at column 2, lines 45-55 does not supply the missing feature in Nidd relating to a middleware layer providing application and service discovery. The cited Beck text simply describes the availability of a middleware layer that enables a device to use, discover and advertise services. The disclosure of middleware for use in discovering of advertising services does not teach or suggest an inquiry result identifying middleware software for executing application and service discovery in an ad hoc network, as described applicants' specification at Paragraph 0043.

Hermann fails to supply the missing feature in Nidd relating to associated services in an ad hoc network for the reasons given in connection with the consideration of claim element (i) above.

Summarizing, applicants have demonstrated above that Nidd, Beck and Hermann, alone or in combination, fail to disclose or suggest the element of claims 48-51 by the absence of disclosure or suggestion of (1) an inquiry result including an indication that at least one nearby device includes a middleware layer;(2) confirming the presence of a middleware layer in a nearby device; (3) establishing a connection with a nearby device when the nearby device includes a middleware layer; (4) conducting middleware-based application and service information exchange to determine a target device supporting a required service, and (5) a list of associated services and devices in an ad hoc network,

The rejection of claims 48-51 is without support in the cited art for the reasons indicated above. Withdrawal of the rejection of claims 48-51 under 35 US 103 (a) and allowance are requested.

2. Claims 32, 36, 40 and 43. – The Examiner cites Hermann at column 4, lines 36-37 and column 5, lines 1-10 as describing the claimed subject matter. The cited text discloses a device maintains (i) a record with information about services and associated identifiers and (ii) a list of identifiers about service-providing devices. The list of identifiers are compared to an

associated service as being in adjacency of a first device. Hermann fails to disclose or suggest a data base of distributed information associating at least one service to at least one device in an ad hoc network and distributed information comprising information exchanged amongst devices. In any event claim 32, 36, 40 and 43 depends from independent claim 48 or 49 or 50 or 51 and are patentable over the cited art on the same basis as independent claim from which it depends.

3. Claims 33 and 37. – The Examiner cites Nidd at Paragraphs 0043-0044 as describing the claimed subject matter. The cited Paragraphs describe a local device connecting to a remote device to retrieve service information from a database for purposes of establishing a connection with the remote device. Applicant has previously demonstrated in the consideration of claim 48 there is no disclosure in Nidd of a distributed database including a reference to a required service and an association between a required service and a target device. Nidd fails to disclose or suggest the subject matter of claims 33 and 37. In any event claims 33 and 37 are patent able over Nidd on the same basis as claim 48 or 49, respectively from which they depend.

4. Claim 34, 38, 41 and 44. – The Examiner cites Herman at column 5, lines 9-15 as describing the claimed subject matter. Applicant understands the cited text to disclose declining a link connection if the connection is not within the adjacency of a requesting device. In contrast, applicant's specification at Paragraph 0013 declines a connection if a required service is not included in a distributed database. In any event claims 34, 38, 41 and 44 are patent able over Nidd on the same basis as claim 49 or 50 or 51, respectively from which they depend.

D. Paragraph 7:

Claims 7-8, 18-19 and 26-27 include features not disclosed or suggested in Nidd, of record; Beck, of record and Smith, of record and overcome the rejection under 35 USC 103 (a), as follows

1. Claims 7, 18 and 26:

The Examiner cites Nidd at Paragraphs 43 and 44 as modified by Beck for disclosing identifying an oldest record. The cited text discloses an inquiring and a nearby device exchanging service lists. The cited text does not describe or suggest identifying the oldest record. The Examiner further cites Smith at Paragraph 110 and 113 as describing overwriting the oldest record. The cited Paragraph describe overwriting duplicate records in a queue not the oldest

record of the queue. Nidd, Beck and Smith fail to disclose the claimed subject matter for the reasons previously indicated. In any event, claims 7, 18 and 24 depend from and further limit claims 45, 46 and 47 and are patentable over Nidd, Beck and Smith on the basis of independent 45, 46, 47, which previously have been distinguished from the cited art. Withdrawal of the rejection and allowance of claims 7, 18 and 24 are requested.

2. Claims 8, 19, and 27:

The Examiner cites Nidd at Paragraphs 43-44 as modified by Beck and Smith at Paragraphs 110, 113 and 0002-0007 as describing the claimed subject matter. Paragraphs 43 and 44 describe exchanging service lists, not identifying the oldest record or identifying a replacement record. Smith at Paragraphs 110, 113 and 002-007 describes overwriting duplicate records in a queue. Nidd, Beck and Smith fail to disclose or suggest the subject matter of claims 8, 19, 27 for the reasons previously indicated. In any event, Claims 8, 19 and 27 are patentable over Nidd, Beck and Smith on the basis independent claims 45 or 46 or 47, respectively, which previously have been distinguished from the cited art. Withdrawal of the rejection and allowance of claims 8, 19 and 27 are requested.

CONCLUSION

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application.

AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. **13-4500**, Order No. 4208-4148. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for

an extension of time to Deposit Account No. **13-4500**, Order No. 4208-4148. A DUPLICATE
OF THIS DOCUMENT IS ATTACHED.

Respectfully submitted,
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Dated: July 28, 2008

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